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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,722	01/22/2004	An-Gong Yeh	FA0790USDIV	5604

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WILMINGTON, DE 19805

EXAMINER

LEUNG, JENNIFER A

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 12/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/762,722

Applicant(s)

YEH ET AL.

Examiner

Jennifer A. Leung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 14-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Amendment*

1. Applicant's amendment submitted on October 10, 2005 has been received and carefully considered. The changes made to the specification and drawings are acceptable. Claims 1-13 are cancelled. Claim 18 is newly added. Claims 14-18 remain active.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 14-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Regarding claim 14, it is unclear as to where support may be found for the limitation of, "dielectric barrier discharge means for generating oxygen plasma *inside* the reactor" (lines 6-7).

The specification, page 6, lines 16-22, sets forth that,

"Reactor 5 can additionally be used for modifying the surfaces of pigment particles, prior to the stabilization process... by providing reactor 5 with means for supplying ozone to reactor 5. The ambient or elevated pressure process uses a dielectric barrier discharge to generate oxygen plasma (atomic) utilizing air as a feed gas. Atomic oxygen combines with molecular oxygen to form stable ozone as an oxidizing agent."

It appears that the "dielectric barrier discharge means" is part of the "ozone generator".

However, ozone generator 42 is shown *outside* reactor 5 (see Figure 2).

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 15-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 15, it is unclear as to the relationship between the “means for supplying ozone to said reactor” and the “dielectric barrier discharge means” set forth in claim 1, lines 6-7.

It is noted that the specification, page 6, lines 16-22, sets forth that,

“Reactor 5 can additionally be used for modifying the surfaces of pigment particles, prior to the stabilization process... by providing reactor 5 with means for supplying ozone to reactor 5. The ambient or elevated pressure process uses a dielectric barrier discharge to generate oxygen plasma (atomic) utilizing air as a feed gas. Atomic oxygen combines with molecular oxygen to form stable ozone as an oxidizing agent.”

Therefore, it appears that the “dielectric barrier discharge means” is part of the “means for supplying ozone to said reactor.”

#### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogan et al. (US 4,590,265) in view of Marie et al. (US 5,458,856).

Regarding claims 14 and 15, as best understood, Bogan et al. (FIG. 1; column 10, line 50 to column 11, line 23) discloses an apparatus comprising:

a reactor assembly comprising a chamber (i.e., defined by water jacket 12) and a reactor

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(i.e., reactor vessel **10**) positioned coaxially inside the chamber **12**;

means for introducing in said reactor **10** a vapor entrained in a carrier gas (i.e., a valve controlled vapor recirculation inlet **24** communicating with vaporizer **32** and blower **28**);

an agitator assembly (i.e., stirrer **14** with stirring motor **16**) placed in said reactor **10**; and

means for supplying ozone to said reactor **10** (i.e., inlet **38**, in communication with an ozone source **34**).

Bogan et al. is silent as to the apparatus further comprising a dielectric barrier discharge means for generating oxygen plasma (i.e., the dielectric barrier discharge means has been considered as part of the means for supplying ozone to the reactor).

In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a dielectric barrier discharge means to the apparatus of Bogan et al. (i.e., as part of the means for supplying ozone), on the basis of suitability for the intended use, because the use of dielectric barrier discharge means for generating oxygen plasma (for ozone) is conventionally known in the art, as evidenced by Marie et al. (see FIG. 1-3), who teaches an apparatus used for generating oxygen plasma/ozone (see column 3, line 53 to column 4, line 6), wherein the apparatus comprises a dielectric barrier discharge means (i.e., a tube of dielectric material **3**, in combination with a first tubular electrode **1** and a second tubular electrode **4**).

5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bogan et al. (US 4,590,265) in view of Marie et al. (US 5,458,856), as applied to claim 14 or 15 above, and further in view of Tokheim (US 1,167,536) or Bliss (US 5,037,210).

The agitator assembly **14,16** is shown comprising a plurality of vanes attached to stirrer **14** (not labeled), rotatably mounted to stirring motor **16** and positioned in reactor **10**. Although

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Bogan et al. does not specifically indicate a “flange” for mounting the plurality of vanes on stirrer 14, it would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a flange for mounting the plurality of vanes in modified apparatus of Bogan et al., on the basis of suitability for the intended use thereof, because the Examiner takes Official Notice that the use of flanges for attaching one object to another is well known in the art.

Bogan et al. is silent as to the agitator assembly 14;16 comprising vanes each having a coil affixed thereto, such that said coils physically contact an inner wall of said reactor. Tokheim (FIG. 1; page 2, lines 11-28) teaches an agitator assembly comprising a plurality of vanes (i.e., arms 15), wherein each vane 15 comprises a coil (i.e., coiled scrapers 19) affixed thereto such that the coils 19 physically contact the inner wall of a vessel (i.e., bottom 2). Bliss (FIG. 1; column 2, line 49 to column 3, line 16) teaches an agitator assembly comprising a coil 5 that may physically contact the inner wall of a vessel (i.e., “Pivotal freedom provides benefit in allowing coil 5 to remain squarely seated against the mixing container bottom”). It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a coil to each of the plurality of vanes in the modified apparatus of Bogan et al., on the basis of suitability for the intended use thereof, because the coils further facilitate a scraping action against the inner wall of the reactor, thereby loosening any sediment that deposits on the inner wall, as taught by Tokheim (page 2, lines 77-90), and, in the case of mixing powdered materials, the coils facilitate the dispersion of agglomerated materials, as taught by Bliss (column 1, lines 33-67).

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bogan et al. (US 4,590,265) in view of Marie et al. (US 5,458,856), as applied to claim 14 or 15 above, and further in view of Breneman et al. (US 4,690,810).

Bogan et al. discloses said means for introducing a vapor entrained in a carrier gas in said reactor **10** comprises a line having an opening **24** positioned distally from an exhaust end of said reactor (i.e., inlet opening **24** is located at the base of the reactor, whereas an exhaust means **40** is located at the top of the reactor; see Figure), with the vapor/gas being subsequently distributed by a felt like distributor **22**. Bogan et al., however, is silent as to the means comprising the instantly claimed configuration of a lance having an opening positioned distally from the exhaust end of said reactor. Breneman et al. (FIG. 1; column 3, line 63 to column 4, line 40) teaches a means for introducing a vapor entrained in a carrier gas in a reactor (i.e., vessel **10**), said means comprising a lance **50** having an opening (i.e., at check valve **44**) positioned distally from an exhaust end (i.e., at **12**) of said reactor. It would have been obvious for one of ordinary skill in the art at the time the invention was made to substitute the claimed configuration of a lance for the means introducing vapor and carrier gas in the modified apparatus of Bogan et al., on the basis of suitability for the intended use, because the use of a lance for introducing vapor/gas into the lower portion of a reactor is conventionally known in the art, as evidenced by Breneman et al. above, and the substitution of known equivalent structures involves only ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958).

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bogan et al. (US 4,590,265) in view of Marie et al. (US 5,458,856), as applied to claim 14 or 15 above, and further in view of Beckman et al. (US 3,168,817).

Bogan et al. discloses that the chamber (i.e., jacket **12**) comprises an inlet and an outlet for circulating coolant (see Figure 1) to control the temperature of the reactor. Bogan et al. is

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silent as to the chamber 12 being “sealed”. In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to substitute another known, suitable temperature control means, such as the instantly claimed sealed chamber, for the chamber 12 in the modified apparatus of Bogan et al., on the basis of suitability for the intended use thereof, because the substitution of known equivalent structures involves only ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958). Beckman et al. evidences a conventionally known temperature control means comprising a sealed chamber (i.e., sealed annular space 28, containing cooling coils 60; FIG. 1; column 3, line 73 to column 4, line 19; column 6, lines 60-74).

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 14-18 have been considered but are moot in view of the new ground(s) of rejection, necessitated by amendment.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37



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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


\* \* \*

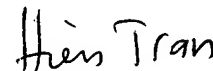
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is (571) 272-1449. The examiner can normally be reached on 8:30 am - 5:30 pm M-F, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer A. Leung

December 15, 2005 



**HIEN TRAN  
PRIMARY EXAMINER**